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ABSTRACT

This booklet is a revision of an earlier annotated bibliography, "Speed Reading," compiled by Allen Berger in 1967 and revised in 1970. The 82 entries are arranged alphabetically by author in the following ten categories: tachistoscope and controlled pacing, paperback scanning, flexible rates of comprehension, retention of gains, perception, processing information, studying, conditioning, sex differences, and measurement. (JM)

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RATES OF COMPREHENSION

An Annotated Bibliography

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INTRODUCTION

Rates of Comprehension is a revision of IRA's earlier Annotated Bibliography, *Speed Reading*, compiled by Allen Berger, first issued in 1967 and revised in 1970. Dr. Berger worked with Dr. James D. Peebles to update the materials for this new bibliography. More than thirty new references in the area have been reported since the beginning of this decade.

For a report of current thinking on this topic, the reader is invited to read "Flexibility and Speed in Reading" by Allen Berger in Robert Karlin (Ed.), *Reading for All*, Proceedings of the Fourth IRA World Congress on Reading, 1973, 180-191. The report cites studies from reading and related disciplines, presents relevant findings of the reading rate survey of the National Assessment of Educational Progress, and notes papers presented at a session of an annual meeting of the National Reading Conference. Papers by Theodore L. Harris, "Reading Flexibility: A Neglected Aspect of Reading Instruction," and James I. Brown, "Techniques for Increasing Reading Rate," appear in John E. Merritt (Ed.), *New Horizons in Reading*, Proceedings of the Fifth IRA World Congress on Reading, 1975. Both world congress proceedings are available from the International Reading Association.

The papers presented at the meeting of the National Reading Conference by Phil L. Nacke, Ronald P. Carver, Peter C. Kump, Vearl G. McBride, and Florence Schale appear in Frank P. Greene (Ed.), *College Reading: Problems and Programs of Junior and Senior Colleges*, Twenty-First Yearbook of the National Reading Conference, Volume 2, 1972. A paper by Ronald P. Carver, "Designing Reading Rate Research," appears in George H. McNinch and Wallace D. Miller (Eds.), *Reading: Convention and Inquiry*, Twenty-Fourth Yearbook of the National Reading Conference, 1975. Both yearbooks are available from the NRC, Godfrey Hall, Clemson, South Carolina 29631; the latter volume is available on microfiche through ERIC/RCS.

Carver presents views on this topic in a document titled *Sense and Nonsense in Speed Reading*, available from Dr. R. P. Carver, Education Building, University of Missouri, Kansas City, Missouri 64110.

For the results of a questionnaire survey of reading improvement practices of commercial reading firms, corporations, colleges, and universities in the United States and Canada, see Berger's "A Comparative Study of Reading Improvement Programs in Industry and Education in the United States and Canada," in David M. Wark (Ed.), *College and Adult Reading*, Sixth Yearbook of the North Central Reading Association, 1971. The paper is also available on microfiche through Eric, ED 035521.

Other collections of studies include "Questions Asked About Speed Reading," *The Clearing House*, 44 (January 1970), 272-278; "Speed Reading: Is the Present Emphasis Desirable?" in Nila Banton Smith (Ed.), *Current Issues in Reading*, 1968 IRA Proceedings, Volume 13, Part 2, 1969, 44-70; and "Selected Review of Studies on the Effectiveness of Various Methods of Increasing Reading Efficiency," *Journal of the Reading Specialist* (renamed *Reading World*), 6 (December 1966), 74-87.

In addition to publications in English on this topic there are a number of publications in Spanish. One is titled *La Enseñanza de la Lectura por el Método Global*, which first appeared in 1939 in Belgium under the title *La Psychologie de la Lecture*. At the time of writing this scholarly work, which contains 389 research references, J. E. Segers was a clinical psychologist at the Free University of Brussels. The third Spanish edition was published in 1958 by Editorial Kapelusz, Moreno 372, Buenos Aires, Argentina.

While Seger's 298 page book provides general information (albeit dated) relating to the reading process, three other books focus more directly on speed reading. One is *Leer Mejor y Más Rápido* by Wolfgang Zielke, a 181 page book which first appeared in Germany and was printed in 1969 in Spain (Artes Graficas Grijelmo, S. A., Uribitarte 4, Bilbao, Spain). Also published in Spain is *Lectura Rápida* by Antonio Blay Fontcuberta (Editorial Iberia, S. A., Muntaner, 180, Barcelona, Spain). This 248 page book attends to perception, comprehension, and application of techniques and includes some interesting references (in particular, one to François Richaudeau).

The remaining book deals with visual and auditory perception and includes a fascinating array of references (including one to St. Augustine's amazement at witnessing someone reading silently as is described in his *Confessions*). Entitled *¿Qué es la Llamada 'Lectura Veloz'?* (What is the So-Called 'Speed Reading'?), the book was written by Jorge A. Bisbini in collaboration with Enrique F. Savransky. Among other things the authors discuss the threshold of visual acuity or sharpness as related to recognition span in rapid reading. They distinguish between relative and absolute visual "sharpness," the former being susceptible to improvement mainly through educational factors (the reader's agility in word

recognition, context clues, and so forth) and the latter mainly through physiological and environmental factors (vision, binocular convergence, illumination, and so forth). This 246 page book was published in 1971 by Enrique Pantós (Corrientes 1515, piso 4, "D," Buenos Aires, Argentina).

The compilers of this bibliography express appreciation for the help provided by Linda E. Pitcher and Michael G. O'Connor and hope that these pages help shed a little more light on the area referred to as Speed Reading.

AB
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TACHISTOSCOPE AND CONTROLLED PACING

Since most studies report the use of a combined methods approach, such studies appear in this category.

AMBLE, BRUCE R. "Reading by Phrases," *California Journal of Educational Research*, 18 (May 1967), 116-124.

Summarizes and discusses the implications of three studies relating to phrase reading training for intermediate and junior high school pupils. Concludes that phrase reading training can increase perceptual span and reading comprehension and rate "with students of low, medium, and high reading achievement" with no "significant advantage or change in reading vocabulary." (23 references)

AMBLE, BRUCE R., and GORDON BUTLER. "Phrase Reading Training and the Reading Achievement of Slow Learners," *Journal of Special Education*, 1 (Winter 1967), 119-126.

Discusses fifty-four students involved in special classes for slow learners—twenty-eight in the phrase training program and twenty-six in a program involving selected reading exercises. Each group had fifteen training sessions over a three week period. The phrase training group made greater gains in rate. (5 references)

ANDERSON, IRVING H., and CAMERON W. MEREDITH. "The Reading of Projected Books with Special Reference to Rate and Visual Fatigue," *Journal of Educational Research*, 41 (1948), 453-460.

Twenty students at the University of Michigan's School of Education read four hours of C. S. Forester's *Captain Horatio Hornblower*. Two hours were spent reading from the book, and two hours from filmstrips projected on the ceiling. The book was read 12 percent faster than the projected version; in both ways, the fastest reading was toward the end of the two-hour period.

BARRY, ROBERT B., and PAUL E. SMITH. "An Experiment in Ninth Grade Reading Improvement," *Journal of Educational Psychology*, 45 (1954), 407-414.

Presents two experiments involving ninth graders in Rochester Public Schools. The first experiment (1951-1952, involving 473 students in two high schools) used groups to determine if any difference in reading ability arose from seeing one or two Iowa films each week. Fourteen films were shown. There was no significant difference between the groups that saw one film and the groups that

saw two films a week. Measurement was the Nelson Reading Test. The second experiment, in 1952-1953, involved 2,166 ninth graders in public schools.

BEAULINE, CLAUDE. "Rapid Reading Training," *Canadian Journal of Optometry*, 31 (December 1969), 100-107.

Discusses relevant data stemming from classes in rapid reading now in the second decade of operation at the School of Optometry of the University of Montreal. Describes the program which includes tachistoscopic and pacing exercises as well as discussions relating to reading. Concludes that "optometry can made a useful and most valuable contribution in the field of reading improvement." (11 references)

BERGER, ALLEN. "Are Machines Needed to Increase Reading Rate?" *Educational Technology*, 9 (August 1969), 59-60.

Discusses findings of research relating to the use of tachistoscopic and pacing devices and concludes that "at this point in time, when teaching groups of students, what can be done with machines can be done as well, if not better, without." Suggests that these findings may in part reflect the software put into the hardware. Emphasizes that the findings refer to groups of students and urges attention be given "to the two or three students in nearly every classroom" who may profit from the use of individual machines. (10 references)

BRIM, BURL J. "Impact of a Reading Improvement Program," *Journal of Educational Research*, 62 (December 1968), 177-182.

Twelve groups, one each month, of U. S. Air Force personnel were trained through the advanced reading program of Perceptual Development Laboratories. Tachistoscopic exercises included single digits, series of digits, geometric forms, word forms, and phrases. "Each group showed a statistically significant gain in speed of reading without a significant loss of comprehension." (12 references)

BROWN, JAMES I. "Techniques for Increasing Reading Rate," in John Merritt (Ed.), *New Horizons in Reading*, Proceedings of the Fifth IRA World Congress on Reading, Newark, Delaware: International Reading Association, 1976, 158-164.

Describes instructional and motivational techniques which have proven useful in speed reading courses designed for senior high, college, and adult students. (2 references)

CASON, E. B. "Mechanical Methods for Increasing the Speed of Reading," *Teachers College Contributions to Education*, 878 (1943), ix, 80.

No significant difference was concluded in results from different methods.

DINTELMAN, C. J. "Skill Development in Junior College Reading Programs," Eric Clearinghouse for Junior College Information, Topical Paper, No. 20, 1971, 19 pp., ED 048859.

Presents generalized program for reading skill development at junior college level. Suggests that speed reading should be concerned with visual discrimination and visual-motor strategies, skimming and scanning, and elimination of faulty reading habits. (21 references)

DUMLER, MARVIN J. "A Study of Factors Related to Gains in the Reading Rate of College Students Trained with the Tachistoscope and Accelerator," *Journal of Educational Research*, 52 (1958), 27-30.

Suggests need, among college students, for further research relating to reading rate and personality and retention of gains in rate.

FANGMAN, THOMAS J. "Phrase Reading for the Mentally Retarded," *Dissertation Abstracts*, 28 (1968), 3500. (University of Iowa)

Involved educable mentally retarded students at the junior and senior high school levels. Training consisted of tachistoscopically presented meaningful phrases on films at third grade level. Films were "presented twice daily for ten consecutive schools days." Concludes that "students in classes for educable mentally retarded can increase their reading rate in a training program designed for mentally normal students" while the degree of comprehension "remains essentially the same."

FLATT, EARLE E. "The Influence of Individualized Eye-Span Training with Digits on Effective Reading Rate," *Dissertation Abstracts*, 27, 10-A (1967), 3221. (University of Connecticut)

Purpose was to determine the "effect of individualized tachistoscopic training with digits on effective reading rate." Involved "four homerooms, each with twenty-six students, from two parochial high schools located in an industrial center. . . ." The training program consisted of twenty-minute sessions three days a week for ten weeks. Findings indicated that students receiving tachistoscopic training with digits did not show a significant improvement in effective reading rate, in words per minute reading rate, or in silent reading comprehension. "On the basis of these findings, there is additional reason to question the value of tachistoscopic training with digits as an aspect of silent reading rate improvement programs."

GLOCK, M. L. "The Effect upon Eye-Movements and Reading Rate at the College Level of Three Methods of Training," *Journal of Educational Psychology*, 40 (February 1949), 93-106.

College freshmen were divided into groups: the first group was taught with Harvard films; the second, with experimental films which allowed two full lines of print to be seen; and the third, with books. All material was the same.

All methods resulted in improved eye movements as well as improved reading rate according to Traxler High School Reading Test, Iowa Silent Reading Test, and the Blommers Rate of Comprehension Test. No method was best, but some teachers were more effective. (12 references)

HANDLEMAN, ZITA K. "The Effects of the Controlled Reader on the Reading Improvement and Personality Adjustment of Students Enrolled in a High School Summer Reading Workshop," *Dissertation Abstracts*, 28, 4-A (1967), 1207-1208. (Rutgers, The State University)

Sixty high school students "were randomized into six sections of reading" in a six week summer workshop "in an urban high school in a low socioeconomic area." Three methods of teaching reading were used in the study: book centered techniques, book centered techniques and machines used substantively, and book centered techniques and machines used as placebo. "Reading improved significantly more with the use of book centered techniques and machine placebo." Regarding personality adjustment, according to the California Personality Test, there was greater improvement with book centered techniques than with either of the other techniques.

HEFLIN, VIRGINIA B. "Is There a Relationship between the Use of Reading Machines and Psychological Stress?" *Proceedings of the College Reading Association*, 1965, 19-30.

States that evidence to date indicates that "instrument techniques using appropriate materials, properly applied, have the decided effect of reducing emotional and physical stress."

HOLMES, JACK A. "Gifted Adults Can Learn to Read Faster," *California Journal of Educational Research*, 4 (1953), 103-110.

Reports on fifteen executives of the Standard Oil Company who were given training using tachistoscope, Harvard Reading Films, discussions, and rate charts. (12 references)

JAMES, RALPH L. "An Investigation into the Reading Efficiency of Students at a Technical Teacher Training College," *British Journal of Educational Psychology*, 37 (1967), 391-393.

States that the purpose of the study was "to discover the value of the use of the Harvard University Reading Course." Adults were in four groups: secretarial, catering, printing, and clothing and allied subjects. A fifth group was the control. Training consisted of eight sessions during which eight films and eight reading passages from the Harvard course were administered, together with their related multiple-choice comprehension tests. All groups except the secretarial and the control gained in reading rate with no change in mean comprehension score. (3 references)

JONES, DAN H. "An Experimental Study of Three Methods of Training Industrial Executives in Reading Improvement," unpublished doctoral dissertation, Michigan State University, 1956.

Discusses results of program for auto company executives.

KARLIN, ROBERT. "Machines and Reading: A Review of Research," *Clearing House*, 32 (1958), 349-352.

Reports on thirteen investigations involving machines and reading done during previous two decades. These were grouped at four levels: elementary, secondary, college, and adult. Found that of the twelve studies measuring natural reading against machine reading, eleven of "the groups that received training in the former either equalled or surpassed the machine groups in rate of reading." Suggested spending more money on materials rather than on machines. (13 references)

LAFFITTE, RONDEAU G., JR. "Analysis of Increased Rate of Reading of College Students," *Journal of Developmental Reading*, 7 (Spring 1964), 165-174.

Reports on fifty-six college freshmen divided into three groups. The first group received skimming practice exclusively; the second group, rapid reading drill only; and the third group, skimming and rapid reading practice. The second and third groups used tachistoscopic and pacing devices. Training lasted two months. All three groups increased reading rate significantly, with most of the gains for the three groups occurring during the first month of training. (35 references)

MANOLAKES, GEORGE. "The Effects of Tachistoscopic Training in an Adult Reading Program," *Journal of Applied Psychology*, 36 (December 1952), 410-412.

Compares thirty-four officers at Marine Corps supply schools who were divided into E and C groups. The C group had tachistoscopic training while the E group had additional vocabulary and comprehension training. Both groups used a reading rate controller (eighteen 25-minute sessions). On tachistoscope, the C group had eighteen 12½ minute sessions. "No significant differences between the groups in the number of fixations, the increase of the span of recognition, the reduction of regressive movements, or reduction of the duration of fixations." There was a significant difference in reading rate in favor of the E group.

MARGARETTEN, ELIAS J. "Tachistoscopic Training in Industry," *American Journal of Optometry*, 29 (1952), 286-292.

Discusses a course consisting of thirty-nine tachistoscopic training sessions which was given to twenty engineers from Western Union. A control consisted of eleven engineers. Of the twenty engineers, eleven finished the course given during the lunch hour. Measuring devices were the Keystone Telebinocular and Minnesota Speed Reading Test for College Students, Part I. Class met two

and three times a week for 30 minutes for a total of 16½ hours. Gains appeared in span of recognition and reading speed, but "the subjective responses to the gains attained seem to be more significant than the statistical results." Suggests no more than 15 minutes for tachistoscope training each session. (10 references)

MAXWELL, MARTHA J., and ARTHUR HORN. "A Comparison of Two Methods for Increasing Reading Speed with the Reading Accelerator," *Journal of the Reading Specialist*, 5 (March 1966), 113-116.

Reports that the group which was told to increase rate on the reading accelerator 150 wpm each session made significantly greater gains in reading rate after eight practice sessions than did the group that was told to increase rate 50 wpm. Twelve college students were involved.

MCDOWELL, NEIL A. "The Effectiveness of the Controlled Reader in Developing Reading Rate, Comprehension, and Vocabulary as Opposed to the Regular Method of Teaching Reading," *Journal of Experimental Education*, 32 (1964), 363-367.

Sought to determine if amount of growth by use of Controlled Reader exceeded that normally expected in a developmental program. There were thirty-two fifth graders involved (paired in matched groups). Found no significant differences between groups before or after program; neither group demonstrated excessive growth.

MILLER, LYLE L. "Speed Reading in the Seventies," *Educational Leadership*, 30 (1973), 623-627.

Reviews recent thoughts about speed reading and cites the value of research. (21 references)

MOORE, GLADYS B. "To Buy or Not to Buy," *Journal of Reading*, 13 (March 1970), 437-440.

Reports the findings of various studies on the effectiveness of mechanical devices used in many speed reading programs. Suggests that "although mechanical devices are an asset, they are not necessary for a successful reading improvement program." (5 references)

POULTON, E. C. "British Courses for Adults on Effective Reading," *British Journal of Educational Psychology*, 31 (1961), 128-137.

Surveyed reading courses in England. Found most based on the Harvard course, using the Harvard films. Additional reading passages, however, were prepared for British students. Reports indicated that "the average rate of reading normally started at 160 to 280 words per minute and ended at 340 to 500 words per minute, giving increases of between 40 and 130 percent. There was more often a gain than a loss in comprehension. . . ." Follow ups on students show losses, but reading is still ahead of beginning rate. (36 references)

RANKIN, EARL F., JR. "Sequential Emphasis upon Speed and Comprehension in a College Reading Improvement Program," *Journal of Developmental Reading*, 7 (Autumn 1963), 46-54.

Two sections of forty-eight students at Texas Christian University were given seven weeks of speed reading followed by seven weeks of comprehension training. Two other sections of forty-eight students each were given the training in converse order. The subjective and objective results indicated that the first group, at semester's end, read faster than the second group; and "there was no significant difference between groups on vocabulary, comprehension, or total test scores." In addition, the first group tended to respond more positively on unsigned questionnaires. (Speed training was given via tachistoscope, reading films, accelerator reading, and timed reading exercises; the comprehension group discussed vocabulary, main ideas, author's purpose, study skills, concentration, and memory.) Indicated that, if poor comprehension is a result of slow speed, speed might be taught first but with care and not with younger groups.

RAYGOR, ALTON L., DAVID M. WARK, and ANN DELL WARREN. "Operant Conditioning of Reading Rate: The Effect of a Secondary Reinforcer," *Journal of Reading*, 9 (January 1966), 147-156.

Significant gains in rate result from the use of reinforcement of green lights. Fifteen college students involved. Suggests need to define behavior and adult reading and reinforce these behaviors.

SOLAN, HAROLD A. "Visual Processing Training with the Tachistoscope: A Rationale and Grade One Norms," *Journal of Learning Disabilities*, 2 (January 1969), 30-36.

Seeks to establish the correlation between tachistoscopic training and reading scores of two groups of children in the sixth month of grade one whose average age is six years, five months. Reports a .50 correlation between reading performance and tachistoscopic response.

STANDLEE, LLOYD S., and EUGENE A. HOOPRICH. *Annotated Bibliography of Reading Instruction for Adults*. San Diego, California: U.S. Naval Personnel Research Activity, Project PF-017-03-011.1S, October 1961. (400 references)

STANDLEE, LLOYD S., and EUGENE A. HOOPRICH. *Review of Research on Reading Instruction for Adults*. San Diego: U.S. Naval Personnel Research Activity, Technical Bulletin 62-12, August 1962. (119 references)

Available from the same source is Hooprich and Anderson's "An Experimental Evaluation of Methods for Improving the Reading Skills of Students at a NESEP Preparatory School," *Research Report* SRR *66-16*, March 1966; and Hooprich's "The Relationship of Reading Ability to Achievement in an Experimental Electronics Technician School," *Research Memorandum* SRM *66-37*, June 1966.

TAYLOR, STANFORD E. "Reading Instrument Usage," *Reading Teacher*, 15 (May 1962), 449-454.

Discusses various kinds of equipment for reading improvement currently in use in schools and acknowledges that this equipment is to be used as an aid to the teacher and as a part of the total program.

TINKER, MILES A. "Devices to Improve Speed of Reading," *Reading Teacher*, 20 (April 1967), 605-609.

Makes reference to much of the tachistoscopic and pacing equipment on the market and, citing the findings of research, questions the value of using this equipment to increase reading rate in the classroom.

WEDEEN, SHIRLEY ULLMAN. "Mechanical versus Nonmechanical Reading Techniques for College Freshmen," *School and Society*, 79 (1954), 121-123.

Study aimed to: "1) study the effects of the reading rate controller on the college student's reading ability; 2) compare the efficiency of this technique with one involving motivation without any instrument; and 3) discover whether the average college freshman's reading can be improved." One hundred and fifty Brooklyn College freshmen were selected for five weeks of training, involving two 50-minute periods a week. Students were separated into three groups. Results showed both methods produced gains, but the machine group improved more in rate than the nonmachine group (which, incidentally, was individually self-timed). Both groups were superior to the control.

WHITING, C. "Experimental Use of Machines in the Training of Interpreters," *International Review of Applied Linguistics in Language Teaching*, 5 (July 1967), 141-144.

Attempts to improve the method of training interpreters to increase speed of translation from one language to another. Involves the use of the tachistoscope and controlled reader. Members of the experimental group were teachers born and schooled in Germany but who had lived most of their adult life in the United States. Results indicate an average 25 percent increase in translation speed with almost no loss in accuracy.

WOOSTER, GEORGE F. "An Experimental Study of the Reading-Rate Controller," *Journal of Educational Psychology*, 45 (November 1954), 421-426.

Brief study "concerned with the possible value of supplementary training on the reading-rate controller in conjunction with a course in effective study." All three groups (the two Es had six students each) used F. P. Robinson's *Effective Study*; the Es also received training on the reading rate controller. Covered four weeks; measurement was Robinson-Hall Reading Test in History. All three groups increased rate; variability was greater on the posttest for each group; no significant difference in mean gain among groups; comprehension of about one-half of all involved in all groups decreased. "No extra benefits seemed to accrue from additional training on the reading-rate controller." (8 references)

PAPERBACK SCANNING

Little research and much controversy preclude an objective evaluation of the paperback scanning method popularized by various commercial firms. In 1962, exponents for various schools of thought relating to speed reading met at a conference. Their views are presented in Russell G. Stauffer (Ed.), *Speed Reading: Practices and Procedures*, Forty-Fourth Annual Education Conference at the University of Delaware, March 1962. Other references follow.

BENDER, CRAIG. "C-S Professor's Methods Develop Top Reading Speeds," Quincy, Illinois, *Herald-Whig*, January 14, 1968, 10a-11a.

Presents an interview with Vearl G. McBride (cf. McBride) who claims that his students are not skimming but are "seeing all of the words and understanding them." McBride emphasizes the need to consider individual differences in teaching rapid reading and recommends an eleven-step approach. For example: hold the book at different angles "to determine which angle is best for you"; practice seeing words fast "with no comprehension or as little as you can manage, for four to six hours"; gradually begin on comprehension as well as speed, trying to answer one or two questions with each reading; and gradually increase your comprehension and maintain the best speed you can.

BERGER, ALLEN. "Effectiveness of Four Methods of Increasing Reading Rate, Comprehension, and Flexibility," in J. Allen Figurel (Ed.), *Forging Ahead in Reading*, 1967 Proceedings, Volume 12, Part 1. Newark, Delaware: International Reading Association, 1968, 588-596. (Doctoral dissertation, Syracuse University, 1966)

Found that all four methods—tachistoscopic, controlled reader, controlled pacing, and paperback scanning—produced significant gains in rate, with the paperback scanning method being significantly superior to the other methods. No significant change appeared in comprehension level. All but tachistoscopic method produced gains in flexibility. All gains were retained when checked eight weeks after the completion of training.

BERGER, ALLEN. "Increasing Reading Rate with Paperbacks," *Reading Improvement*, 9 (Winter 1972-73), 78-84.

Gives specific suggestions on how to increase reading rate with paperbacks. Contains a discussion of fixations, recognition, vocalization, subvocalization, and regressions. Emphasizes the need for students to have an increased understanding of the reading process and the concept of flexibility. Includes a brief listing of paperbacks and two sample quizzes.

BLANCHARD, B. EVERARD. "Improving Rate, Vocabulary, and Comprehension in Reading by the Inversion Technique," *Journal of Experimental Education*, 26 (September 1957), 43-49.

Three groups of 100 each were matched. One group received the 26-hour course over six months in inversion method (odd lines reversed); another group had the same material presented regularly; and the third group discussed but received no instruction. Inversion group performed significantly better than other groups on variety of tests. (4 references)

CARVER, RONALD P. "Speed Readers Don't Read: They Skim," *Psychology Today*, 6 (August 1972), 22-30.

Claims made by commercial courses for increasing rate of reading are viewed in the light of available research evidence.

COFFMAN, WILLIAM E., and MARY ELLEN PARRY. "Effects of an Accelerated Reading Course on SAT-V Scores," *Personnel and Guidance Journal*, 46 (November 1967), 292-296.

Three groups of students participated in an accelerated three credit reading course offered by the English department of "a large public university in the Southeast." The verbal test of the SAT was given to all groups. Two groups met for a total of forty-eight hours (six hours a week) during an eight-week period; one group met at the first half of the third trimester, and the other group met at the second half of the third trimester. The third group met for a total of forty-five hours (three hours a week) during the whole third trimester. Objective of the course was to improve speed with relative accuracy using paperbacks. Findings, which included a significant decrease in the posttest scores of the third group, indicated "no evidence...that the SAT-V scores are improved by taking the developmental reading course." Coffman discusses possible reasons why the findings in this study are different from those in a study by N. J. Pallone, "Effects of Short and Long Term Developmental Reading Courses upon SAT Verbal Scores," *Personnel and Guidance Journal*, 39 (1961), 654-657.

CORMAN, LOUISE, et al. *Applicability of Rapid Reading Instruction to the Middle Grades*. Cambridge, Massachusetts: Research Institute for Educational Problems, 1973, 18 pp., ED 085681.

Summarizes results of rapid reading with fifth and seventh grade students using scanning (nonmachine) method. (10 references)

FLEMING, JAMES T. "Skimming: Neglected in Research and Teaching," *Journal of Reading*, 12 (December 1968), 211-214, 218.

Discusses the research of Grayum and Moore conducted in the 1950s. Questions some current assumptions and calls for further research. (3 references)

LIDDLE, WILLIAM. "An Initial Investigation of the Wood Reading Dynamics Method," unpublished doctoral dissertation, University of Delaware, 1965. *Dissertation Abstracts*, 27 (September 1966), 605-A.

Found that rate rose significantly and comprehension dropped after training in the Reading Dynamics Method. (78 references)

MCBRIDE, VEARL G. "Worthwhile Reading: A Time for Action!" *North Carolina Education*, January 1967, 15, 34.

Criticizes current views on increasing rate of reading; presents unorthodox views and methods.

MCBRIDE, VEARL G. "Adding Speed as You Read," *Florida Education*, 42 (September 1964), 14-15.

Expresses unorthodox views on increasing rate; makes claims of over 100,000 words a minute.

MCBRIDE, VEARL G. "Rapid Reading—Dr. McBride Responds," *Florida Education*, 42 (November 1964).

Expounds further on a speed reading program where three books are read simultaneously.

MOSS, RUTH. "Teach Yourself Speed Reading," *Chicago Tribune*, May 19, 1968, Section 10A, 8-14. (Annual Spring School Guide)

A *Tribune* staff writer describes a three week course on how to teach yourself speed reading.

ROBINSON, F. B. "An Aid for Improving Rate," *Journal of Educational Research*, 27 (February 1934), 453-455.

States that college freshmen were trained to read in spaced phrases of slowly increasing length. At the end of ten weeks, "reading rate as measured by four tests had increased 28 percent and comprehension accuracy had shown a small gain (5 percent)." Recommends this type of training as possibly suitable for elementary school pupils.

SPACHE, GEORGE D. "Is This a Breakthrough in Reading?" *Reading Teacher*, 15 (January 1962), 258-263.

Spache notes, in commenting upon claims by Reading Dynamics, that studies report it is physiologically "impossible to read faster than 800 to 900 words per minute"; that the "normal levels of 70-80 percent" comprehension of material read was uncertain since the students are checked only by reporting orally; that eye movements fixate at least once per line; and that students who demonstrate exceptional speeds take advantage of information gained during a five-minute

prereading survey and from their background of previous knowledge. (7 references)

STEVENS, GEORGE L., and REGINALD C. OREM. "Characteristic Reading Techniques of Rapid Readers," *Reading Teacher*, 17 (November 1963), 102-108.

Disputing the 1962 article by Spache, the writers claim that rapid readers can read routine material faster than 1,500 words per minute, but they must have a conceptual background in the material. In addition, the writers claim that fast readers are able to break the sound barrier and move directly from symbol to meaning. (10 references)

TAYLOR, STANFORD E. "An Evaluation of Forty-One Trainees Who Had Recently Completed the 'Reading Dynamics' Program," *Eleventh Yearbook of the National Reading Conference*, 1962, 41-56.

Cites the results of eye photographs made while reading. On the basis of the photographs, Taylor disputes various statements made by Evelyn Wood, particularly in regard to "reading dynamically." Taylor claims that Wood's students have eye movements that appear like the eye movements in the skimming photographs made by Walter J. Moore and others. Taylor also disputes Wood's statement that "you may read an easy novel at 5,000 or 6,000 words per minute, but read technical material at 2,500 words per minute...." He says that not one of the forty-one graduates was able to attain such performances. (4 references)

Unsigned Article. "The Bookworm Gets an Outboard Motor," *The Times Educational Supplement* (London), 2761 (April 19, 1968), 1311.

Discusses the Evelyn Wood Reading Dynamics method in some detail. Also comments on the Craig Reader. "Above all, practice is needed."

WATTS, JANET. "New Invasion from the U.S.," *The Times Educational Supplement* (London), 2765 (May 17, 1968), 1683.

Notes the opening of the "first British school" to use the Evelyn Wood Reading Dynamics method. Contains excerpts of a brief interview with Wood.

FLEXIBLE RATES OF COMPREHENSION

One of the first calls for consideration of flexible reading rates was made by Carrillo and Sheldon in 1952. McDonald made a comprehensive review of forty-one studies relating to rate and reading flexibility; his review appears in the *Journal of Reading*, 8 (January 1965), 187-191. A more recent review is Samuel Weintraub's "Research," *Reading Teacher*, 21 (November 1967), 169-173. Rankin reviews concepts and presents a model relating to reading flexibility in *Measurement of Reading Flexibility*. Newark, Delaware: International Reading Association, 1974, 62 pp. Other references follow.

BERG, PAUL CONRAD. "Flexibility in Reading," in J. Allen Figurel (Ed.), *Vistas in Reading*, 1966 Proceedings, Volume II, Part I. Newark, Delaware: International Reading Association, 1967, 45-49.

Cites the relationship between flexible reading and psychological freedom.

BOWMAN, NORMA E. "Some Relationships between Flexibility and Reading Gain at the College Level," *Journal of the Reading Specialist*, 6 (October 1966), 20-25.

Suggests the consideration of personality tests in determining reading flexibility.

CARRILLO, LAWRENCE W. "Developing Flexible Reading Rates," *Journal of Reading*, 8 (April 1965), 322-325.

Gives ten suggestions on developing flexible rates of comprehension and recommends the teaching of flexible reading in high schools.

CARRILLO, LAWRENCE, and WILLIAM D. SHELDON. "Flexibility of Reading Rate," *Journal of Educational Psychology*, 49 (May 1952), 299-305.

States that one of the first criteria for consideration of flexible rates of reading is the need for tests of flexibility.

FURR, ONETA R. "Improving Flexibility in Reading for the Advanced Student," in Helen K. Smith (Ed.), *Meeting Individual Needs in Reading*. Newark, Delaware: International Reading Association, 1971, 124-132.

Presents a rationale for developing flexible reading abilities with advanced readers from the intermediate grades through high school. Classroom strategies for increasing flexibility are discussed, with emphasis on vocabulary development, use of references, and independent research projects. (4 references)

HARRIS, THEODORE L. "Reading Flexibility: A Neglected Aspect of Reading Instruction," *New Horizons in Reading*, Proceedings of the Fifth IRA World Congress on Reading. Newark, Delaware: International Reading Association, 1976, 27-35.

States that, after two weeks of training, a group of nine-year-olds were capable of varying reading skill to purpose and retained the skill three weeks later. Suggests that early reading instruction which requires an invariant reading speed be replaced with one that is variable in response to needs of students. (12 references)

HERCULANE, SISTER MARY. "A Survey of the Flexibility of Reading Rates and Techniques According to Purpose," *Journal of Developmental Reading*, 4 (Spring 1961), 207-210.

Describes a study involving 102 eighth grade pupils of average or above average intelligence in three schools in a midwestern city. The intent was "to ascertain the extent to which pupils in the eighth grade vary their reading rate and technique of reading to the purpose of reading." The pupils read three selections, varying from 1,500 to 1,900 words in length, with the stated purposes of skimming and both rapid and thorough reading. Findings indicated "a very insignificant variation in speed and technique according to the purpose of reading." Cites the need for "the development of flexibility in reading" at the upper elementary level.

HILL, WALTER R. "Influence of Direction upon the Reading Flexibility of Advanced College Readers," *Thirteenth Annual Yearbook of the National Reading Conference*, 1964, 119-125.

Found that reading passages with different sets of directions did not significantly change the reading rate of the college students involved.

LAYCOCK, F. "Flexibility in Reading Rate and Einstellung," *Perceptual and Motor Skills*, 8 (1958), 123-139.

A total of thirty-four sixth grade students (twenty-six flexible readers and thirteen inflexible) were checked to determine when flexibility and inflexibility begin. They were found to begin below sixth grade. Also checked the Einstellung (inflexible persistence) effect via tricky arithmetic problems contained in the Luchins Water Jar Test. Found that flexible readers tended to change method of attacking these problems but inflexible readers did not.

LETSON, CHARLES T. "The Construction and Evaluation of a Test to Measure the Flexibility of Reading Rate," unpublished doctoral dissertation, Boston University, 1956.

Describes one of the first tests for reading flexibility.

LETSON, CHARLES T. "The Relative Influence of Material and Purpose on Reading Rate," *Journal of Educational Research*, 52 (February 1959), 238-240.

Indicates that merely telling a person to read faster or slower will not change rate.

LEVIN, BEATRICE J. "The Flexibility of Reading Rate," in J. Allen Figurel (Ed.), *Forging Ahead in Reading*, 1967 Proceedings, Volume 12, Part 1. Newark, Delaware: International Reading Association, 1968, 596-603. (Doctoral dissertation, Temple University, 1966)

LLOYD, BRUCE A., and ROSALIA C. LLOYD. "Paradigm and Reading Flexibility," *Education*, 92 (1971), 57-65.

Presents study in which three-step reading lessons were conducted to increase pupil reading achievement and flexibility. Experimental fifth and sixth grade subjects received twenty minutes of instruction daily for five weeks in 1) digital exercises to increase perceptual speed, 2) vocabulary exercises to strengthen word recognition, and 3) comprehension exercises to develop skill in reading for understanding. Experimental program increased rate and accuracy with little change in vocabulary and comprehension. (21 references)

MCDONALD, ARTHUR S. "Flexibility in Reading," in J. Allen Figurel (Ed.), *Reading as an Intellectual Activity*, Proceedings of the International Reading Association, 8. New York: Scholastic Magazines, 1963, 81-85.

Traces history and cites present confusion in regard to the concept of reading flexibility.

METSKER, CAROL J. "Reading Versatility: A Study of Reading Rate and Comprehension in Grade Six," *Dissertation Abstracts*, 27, 11-A (1967), 3630-3631. (University of Illinois)

Purpose was to determine the relationship between reading versatility and other reading and mental abilities. Involved sixth grade pupils "from a high socioeconomic suburb of a large metropolitan area." Findings indicated that in comparison, versatile readers spend less time daily reading the newspapers, "do not read more books nor spend more time reading than nonversatile readers, and spend no more time and no less time participating in out-of-school activities" than the nonversatile readers.

STAUFFER, RUSSELL G. "Speed Reading and Versatility," in J. Allen Figurel (Ed.), *Challenge and Experiment in Reading*, Proceedings of the International Reading Association, 7. New York: Scholastic Magazines, 1962, 206-210.

Cites the value of flexibility. A similar study involving a modified Wood approach is mentioned. Involved fifty university juniors, divided into control and experimental groups. The experimental group received twelve weeks of in-

struction—two 1½ hour meetings a week. Use was made of Steinbeck's *The Pearl* and Freedman's *Principles of Sociology*. At the end, in both fiction and nonfiction, "the mean rate of the experimental group was significantly greater . . . ." In comprehension, there were "no significant differences between the two groups" (cf. Liddle). Stauffer says that it is possible for some people to eventually read almost as fast as they think; first, though, they must break the "oral-visual" barrier.

WITTY, PAUL A. "Rate of Reading: A Crucial Issue," *Journal of Reading*, 13 (November 1969), 102-106, 154-163.

Reviews research from 1921 to present. Cites the views of Tinker, Wood, Stauffer, Spache, McLaughlin, Taylor, and others. Suggests the continued need for programs that emphasize reading flexibility and for further research on the reading process. (27 references)

RETENTION OF GAINS

Research does not provide clear-cut evidence of retention of gains in reading improvement; however, some gains in rate seem to be maintained.

COSPER, RUSSELL, and NEWELL C. KEPHART. "Retention of Reading Skills," *Journal of Educational Research*, 49 (November 1955), 211-216.

Study aimed at retention of speed gains; 204 students enrolled in 1950 were pre- and posttested with Diagnostic Reading Tests, Survey Section; control was 208 students who volunteered. Fourteen months later, invitations for retesting were sent out and 28 responded in E group and 28 in C group. Results: A significant faction (ca. 60 percent) of the speed gained during the developmental program was retained after fourteen months.

LABMEIER, ANGELA M., and EDWARD L. VOCKELL. "Effects and Correlates of a Course in Speed Reading," a 13 page paper available through Eric, ED 058010.

Checking at intervals of three and six months after completion of a reading course indicated that the comprehension and rate gains made by ninth grade students were maintained.

MASSIE, JAMES S. "In-Plant Training for Better Reading," *Factory Management and Maintenance*, 3 (March 1953), 110-112.

In checking retention, found an increase beyond the scores attained on the testing at the end of the program of instruction.

RAY, DARREL D. "The Permanency of Gains Made in College Reading Improvement Programs," in J. Allen Figurel (Ed.), *Improvement of Reading through Classroom Practice*, Proceedings, 9. Newark, Delaware: International Reading Association, 1964, 192-193.

Reviews fifteen studies dealing with retention of gain since 1950. Seven indicated a retention of gain in reading rate, while five reported a decline, and three reported additional gain beyond the rate attained on the posttest. (17 references)

SCHWARTZ, MARVIN F. "An Evaluation of the Effectiveness of the Reading Training Given in the U.S. Naval School, Preflight," USN School Aviation Medicine Research Report, 1957.

Describes program indicating rate of college level subjects increased while comprehension decreased as a result of training. Retention was checked eight weeks later and it was found that 90 percent of the gain was retained.

STATON, THOMAS F. "Preliminary Evidence on Permanency of Reading Rate Increases Following Intensive Training in a Reading Lab," *American Psychologist*, 5 (1950), 341-342.

Twelve Air Force officers who had completed the standard reading improvement lab course developed and supervised by Air University were located and, after a time lapse ranging from four months to one year, completed another course similar to the first. It was found that 1) a reading course improves rate and comprehension, 2) following end of course there is a drop in reading rate but not to the point of beginning rate, and 3) "repetition of the course tends to result in a reading rate higher than that achieved at the end of the original course."

STEBENS, L. DUANE, and BERNARD R. BELDEN. "Retention of Gains in Reading After Five Semesters," *Journal of Reading*, 13 (February 1970), 339-344.

Investigates the effectiveness of laboratory experience at Oklahoma University for 108 university freshmen who enrolled in a reading program designed to develop reading speed, comprehension, vocabulary, and study skills. This experimental group was compared to a control group. Results indicate that, after a five semester lapse of time, both groups made significant gains but the experimental group made significantly greater gains in reading skills. Concludes that "academic experience and maturation may account for a part of these gains, but it appears that formal training significantly affects reading abilities." (6 references)

THALBERG, STANTON P. "Reading Rate and Immediate versus Delayed Retention," *Journal of Educational Psychology*, 58 (1967), 373-378.

Involves 176 college freshmen assigned to one of two conditions of retention. One group was tested immediately after reading a 1,500 word passage; a second group was tested 24 hours later on the same passage. The students "were subdivided within treatments into fast, average, and slow rate groups." Findings indicated that "slow readers retained significantly more than both average and fast readers" under immediate testing; however, under conditions of delayed testing, "retention differences between rate groups disappeared." Concludes that "while more efficient readers remember fewer of the details in a message immediately following the reading than do their slower counterparts, these details extinguish equally for both groups within 24 hours." (19 references)

THOMAS, SYLVIA LOUISE. "An Analysis of a Reading Rate Improvement Program in Grades Two, Four, and Six," unpublished doctoral dissertation, Montana State University, August 1972, ED 067653.

Significant gains in comprehension were made in grade two while both rate and comprehension showed significant increases in grade four. Gains were maintained six months after the end of the experimental program.

PERCEPTION

Strong interest in perception can be traced back to the studies of Stroud in the middle 1950s. Since that time, a variety of studies relating to various factors of perception have appeared in the journals. It is interesting to note that as early as 1933 an article on perception appeared in the *Japanese Journal of Applied Psychology*. Space limitations preclude the inclusion of the brilliant series of studies performed by Miles A. Tinker; the reader is urged to consult Tinker's *Bases for Effective Reading*, published in 1965 by the University of Minnesota Press, Minneapolis, which contains 356 references. Another review, by Samuel Weintraub and Earl Hanson, is "Factors Relating to Reading Rates," *Reading Teacher*, 21 (April 1968), 663-669.

BOTHA, ELIZE, and ANN CLOSE. "Achievement Motivation and Speed of Perception in Relation to Reading Skill," *Perceptual and Motor Skills*, 19 (1964), 74-78.

States that significant positive correlation is found between need for achievement and improvement of reading speed among university students.

BUSWELL, GUY T. "The Relationship between Perceptual and Intellectual Process in Reading," *California Journal of Educational Research*, 7-8 (1956-1957), 99-103.

Checked 60 university juniors and seniors with the Van Wagenen Rate of Comprehension Test in silent reading and then with four perceptual tests. Correlations between the rate of reading and perceptual tests: 1) with tachistoscope, plus 0.6; 2) with paper and pencil, plus .24; 3) with film test of words and phrases, plus .35; and 4) with eye movement span of perception while reading, plus .63. Suggests elementary schools should improve rate of perception skills for ease of future college students.

DINNERSTEIN, ALBERT J., and RAYMOND BLITZ. "Perceptual Delays and Speed of Reading and Tapping," *Perceptual and Motor Skills*, 19 (1964), 867-873.

Hypothesizes that "intermodal differences in perceptual latencies will produce a corresponding hierarchy in reading and tapping." Results bore out hypothesis, particularly for the older and less educated subjects.

FUDIN, ROBERT. "Critique of Heron's Directional Reading Conflict Theory of Scanning," *Perceptual and Motor Skills*, 29 (August 1969), 271-276.

Discusses the theory of scanning tachistoscopically presented alphabetical stimuli proposed by Heron in "Perception as a Function of Retinal Locus and

Attention," *American Journal of Psychology*, 70 (1957), 38-48. Heron's theory "basically holds that eye-movement tendencies established through reading are also operative in covert scanning because tachistoscopically exposed material is encoded in a manner similar to the way it is read." While in essential agreement with Heron's theory, Fudin makes a slight modification in light of his conclusion that eye-movement tendencies "operate sequentially, not simultaneously. . . ."

GEYER, JOHN J. "Perceptual Systems in Reading: A Temporal Eye-Voice Span Constant," *Dissertation Abstracts*, 28 (1967), 122-123.

Recognized by IRA as one of the year's outstanding dissertations. See Helen K. Smith (Ed.), *Perception and Reading*, 1967 Proceedings, Volume 12, Part 4. Newark, Delaware: International Reading Association, 1968, 44-53.

GILBERT, LUTHER C. "Saccadic Movements as a Factor in Visual Perception in Reading," *Journal of Educational Psychology*, 55 (1959), 15-19.

Tested seventy-six college juniors, seniors, and graduates—all members of classes of educational psychology. Found that "both good and poor readers make more perceptual errors when they read with eye movements than they do when reading without movements." Also found that "saccadic movements are associated with a substantially greater loss in visual perception for the poor reader than they are for the good reader." Also found that "both good and poor readers can process simple prose material mentally at a faster rate and more accurately than they actually do when reading with saccadic movements. (5 references)

GILBERT, LUTHER C. "Speed of Processing Visual Stimuli and its Relation to Reading," *Journal of Educational Psychology*, 55 (1959), 8-14.

Checked sixty-four college juniors, seniors, and graduates—all members of classes in educational psychology. Found that if a phrase is left on a screen for 1/5 or 1/4 of a second before extraneous material is presented on the screen, "The extraneous visual material has little influence on the span of visual perception." Found, also, that there existed a "substantial correlation between the length of the fixation pauses students use in reading simple prose material and the speed with which the students can process tachistoscopically presented stimuli resulting from simple phrases." (5 references)

MCNAMARA, W. J., L. G. PATERSON, and M. A. TINKER. "The Influence of Size of Type on Speed of Reading in the Primary Grades," *Sight Saving Review*, 23 (1953), 28-33.

A total of 3,050 pupils were tested with author made tests (McNamara's dissertation); type sizes used were 8, 10, 12, 14, 18, and 24. Found that in the first two grades, type size had no influence on reading speed. In the third grade, 10, 12, and 14 point type were read faster than 8, 18, or 24. Suggests that type

has no effect on reading until habits become stabilized. For adults, 9, 10, 11, and 12 point type procure equivalent speeds; 6 and 8 produce slower speeds. (10 references)

MOORE, WALTER J. "A Laboratory Study of the Relation of Selected Elements to the Skimming Process in Silent Reading," unpublished doctoral dissertation, Syracuse University, 1955.

Purpose was "to identify objectively the characteristics of the skimming process in silent reading and to gain an insight into the personal factors that are related to efficient skimming as exhibited in the various patterns." Twenty-seven persons were studied intensively. All were given the Rorschach (via group method), plus other tests. All read while their eye movements were photographed; the photos are included in the dissertation. No similar patterns were found among highly effective skimmers. Observes that freedom from disturbing emotional problems is a necessity for skimming and suggests further research in this area. (50 references)

MORTON, JOHN. "The Effects of Context upon Speed of Reading, Eye Movements, and Eye-Voice Span," *Quarterly Journal of Experimental Psychology*, 16 (1964), 340-354.

Students read aloud 200-word passages and eye movements were recorded along with a trace of speed output. Speed of reading was measured via syllable as unit of measurement. Fast readers used contextual cues more efficiently than did slow readers. Fast readers also had a larger material span, suggesting that eye-voice span measured in time depends upon the chosen speed and the material span.

ONG, JIM, KENNETH SCHNEIDER, and JOSEPH MORAY. "Reading Ability and Perimetric Visual Field," *California Journal of Educational Research*, 11 (1960), 61-67.

"The perimeter was used to measure 155 children, age about eleven. Scores of power reading, speed of reading, and IQ were obtained." It was found that a "significant sex difference exists in the sizes of the perimetric visual fields, boys' being about two degrees larger than girls." No relationships found between width of either the horizontal or vertical peripheral visual fields and power, or speed of reading, nor between IQ and size of peripheral fields. (7 references)

PATERSON, DONALD G., and MILES A. TINKER. "Studies of Typographical Factors Influencing Speed of Reading," *Journal of Applied Psychology*, 15 (1931), 241-247.

Two groups, each containing 140 students (one a control group) were involved to determine the effect of black printing on white background and vice versa. White printing on black background resulted in 10.5 percent reduction of speed. Discussed possible causes and applications.

PATERSON, DONALD G., and MILES A. TINKER. "Influence of Line Width on Eye Movements," *Journal of Experimental Psychology*, 27 (1940), 572-577.

Line widths can be varied "to a surprising degree without any adverse effect on speed." Optimum width is about 19 picas; too short, 9 picas; and too long, 43 picas. The short line results in longer fixations; the long line results in eye difficulty on return sweep to next line.

ROSE, FLORENCE C., and STEVEN M. ROSTAS. "Effect of Illumination on the Reading Rate and Comprehension of College Students," *Journal of Educational Psychology*, 37 (1946), 279-292.

Four experiments were conducted to determine if improved illumination affects speed in reading. Subjects were students at Smith College. Lighting ranged from 2 or 3 footcandles to 55 footcandles. Results indicated wide individual variations but, as groups, no significant differences were noted between reading efficiency in rate or comprehension and amount of illumination, although a relationship between posture and illumination was observed.

SAMUELS, S. JAY. "Word Associations and the Recognition of Flashed Words," Final Report sponsored by the U.S. Office of Education, 1968, ED 021699.

Results of studies indicate that word recognition speed was facilitated when associative connections between words in the text matched the word associations of the reader. Recognition was retarded when a nonassociative preceded the target word. (9 references)

SCHALE, FLORENCE. "Vertical Methods of Increasing Rates of Comprehension," *Journal of Reading*, 8 (April 1965), 296-300.

Suggests the possibility of reading "squares" of print.

SMITH, PETER B. "Eye Movements and Rapid Reading Reconsidered," *Fourteenth Yearbook of the National Reading Conference*, 1964.

Criticizes findings and views of Stanford E. Taylor (see Taylor).

STEVENS, DOUGLAS A., and ROGER L. ADAMS. "Improvement in Rapid Reading as Related to Visual Acuity and Initial Reading Speed," *Journal of Educational Research*, 62 (December 1968), 165-168.

Discusses thirty-six engineering students involved in a rapid reading course at Vanderbilt University. Each student was identified as either myopic or emmetropic. On the basis of the initial reading speed, the myopic and emmetropic groups were divided into faster and slower readers. Following a program involving tachistoscopic training, "the increase in reading speed of the myopic group was significantly greater than that of the emmetropic group" and "the group reading initially faster improved at a more rapid rate than did the

slower group." Additional findings indicate that, "by the final measure, reading speed was more related to visual acuity than to the individual's initial reading speed."

STROUD, J. B. "Rate of Visual Perception as a Factor in Rate of Reading," *Journal of Educational Psychology*, 36 (1945), 487-498.

The Chapman-Cook Speed of Reading Test was given to 570 pupils in grades four, five, and six, corroborating earlier results of investigations by Gates (1922), and by Sister Mary (1929). Found "evidence of a significant relationship (in the neighborhood of .50) between rate of reading and rate of visual perception as measured by tests of word selection, letter selection, and number selection." (8 references)

SUTHERLAND, JEAN. "The Relationship between Perceptual Span and Rate of Reading," *Journal of Educational Psychology*, 37 (September 1946), 373-380.

Results show that "training calculated to improve perceptual span will also improve rate of reading and rate of perception." Results are "inconclusive" but seem to suggest that "the group that had previous training in perceptual span made faster initial progress in improvement in rate than a comparable group that had not had training in perceptual span."

TAYLOR, EARL A. "The Spans: Perception, Apprehension, and Recognition as Related to Reading and Speed Reading," *American Journal of Ophthamology*, 44 (1957), 501-507.

Gives evidence which indicates that average readers cannot see several words or phrases at a single fixation. Contains a table made from 5,000 eye movement records. (22 references)

TAYLOR, STANFORD E. *Eye Movements and Reading: Facts and Fallacies*. Huntington, New York: Educational Developmental Laboratories, November 1963.

Reports "the purpose of this newsletter is to present information gathered through eye-movement photography in order to clarify the fallacies and present the facts regarding eye movements and reading." (21 references)

TAYLOR, STANFORD E. "Rebuttal to Paper 'Eye Movements and Reading Reconsidered,'" *Fourteenth Yearbook of the National Reading Conference*, 1964.

Taylor refutes arguments made by Peter Smith (see Smith).

TINKER, MILES A. "Cumulative Effect of Marginal Conditions upon rate of Perception in Reading," *Journal of Applied Psychology*, 32 (1948), 537-540.

Purpose was to determine if three marginals—illumination intensity, type form, and type size—which in themselves at certain levels have no significant

retardation effect, have such an effect when combined. Found that when combined, speed of perception was retarded 10.4 percent. Precise conditions involved reading 8 point type, italic type form, under 3 footcandles for 1¾ minutes. Measuring instrument was Tinker's Speed of Reading Test. (2 references)

TINKER, MILES A. "Brightness Contrast, Illumination Intensity, and Visual Efficiency," *American Journal of Optometry*, 36 (May 1959), 221-235.

Rate of reading was checked for various levels of illumination. Increasing illumination beyond 25 footcandles had no effect on speed of reading connected material.

TINKER, MILES A., and DONALD G. PATERSON. "Eye Movements in Reading a Modern Typeface and Old English," *American Journal of Psychology*, 54 (1941), 113-114.

Eye movement photographs were taken of twenty students reading ordinary typeface and Old English. Found that reading the latter tended to "reduce the span of perception, to increase the number of fixations, total perception time, and the number of regressive movements."

TINKER, MILES A., and DONALD G. PATERSON. "Speed of Reading Nine Point Type in Relation to Line Width and Leading," *Journal of Applied Psychology*, 33 (1949), 81-82.

Purpose was to determine the "influence of line width and leading on the speed of reading 9 point type." Results indicated that optimal rate of reading occurs with line widths of 14 to 30 picas with 1 to 4 points leading.

TU, HORACE T. C. "The Effects of Different Arrangements of the Chinese Language upon Speed and Comprehension of Silent Reading," *Journal of Genetic Psychology*, 38 (1930), 321-337.

For centuries, the Chinese have been reading vertically; lately, however, some books have been printed with the Chinese characters presented horizontally. Several studies were made by the investigator who noted that Huey found earlier that in reading English material of long nonsense words, a vertical pattern might actually be faster than the present horizontal pattern of reading (words have to be long and there must be sufficient practice). But Tu found that, for Chinese characters, which are all the same length and all monosyllables, it is more efficient to read in a horizontal manner. (8 references)

VERNON, MAGDALEN D. *Visual Perception and Its Relation to Reading*. Newark, Delaware: International Reading Association, 1966, revised 1973.

Includes sources on perception of words, forms, and sequential memory.

WALTON, HOWARD N. "Vision and Rapid Reading," *American Journal of Optometry*, 34 (1957), 73-82.

Gives historical background of eye movement studies and notes that, at a distance of 16 inches, a person can see 1.1 inches on either side at a fixation point. This means he can see relatively clearly three words of five letters each and "by utilizing general word shape, context, and familiar letter groups, a word at either end of the central fixation point [may] be deduced." Notes that average adult reader fixates on each word for 1/4 second, and the saccadic movement is 3/50 of a second. (20 references)

ZACCARIA, ATTILIO, JR., and M. E. BITTERMAN. "Effect of Fluorescent Flicker on Visual Efficiency," *Journal of Applied Psychology*, 36 (December 1952), 413-416.

Twenty students at the University of Texas were told they were being checked for reading speed, using Tinker's Speed of Reading Test. But they were really being checked as to the effect on visual fatigue of AC and DC operated fluorescent lighting. Performance was measured for "two 30-minute periods under 20 footcandles of fluorescent daylight 'illumination.'" Under the two conditions, "performance did not differ significantly," but the AC condition "produced a significantly greater drop in critical fusion frequency than did the DC." Only 25 percent of students noticed the difference in the illumination but, of these, all preferred DC. (20 references)

PROCESSING INFORMATION

The period including the latter part of the 1950s and all of the 1960s saw a re-emergence of studies on perception and processing of visual stimuli. For the essential findings of Cleland's study on implicit speech during silent reading, see "Speed Reading: Is the Present Emphasis Desirable?" in Nila Banton Smith (Ed.), *Current Issues in Reading*, 1968 Proceedings, Volume 13, Part 2. Newark, Delaware: International Reading Association, 1969.

BEAR, R. M., and H. S. ODBERT. "Experimental Studies of the Relation between Rate of Reading and Speed of Association," *Journal of Psychology*, 10 (1940), 141-147.

As reported in 1934, Traxler found a "direct relation" between rate of reading and speed of association. Studies by the authors reveal no such "marked relationship." Note that the difference in results may be a result of statistics used as well as perception skills. (13 references)

BOSCO, JAMES J., "The Processing Speed of Humans on Various Visual Tasks: An Analysis of Relationships," Final Report sponsored by the U.S. Office of Education, 1974. ED 097349

A study to examine the relationship between various techniques used to estimate the time required by a human to process a visual stimuli; for example, recognize a stimulus input into the visual perceptual system. Sixteen tests of visual processing speed were administered to 110 undergraduate students. Data indicated that estimates of the processing speed of individuals tended to be inconsistent across various types of tasks. (19 references)

BROOKS, L. R. "The Suppression of Visualization by Reading," *Quarterly Journal of Experimental Psychology*, 19 (November 1967), 289-299.

Describes four experiments which "demonstrate a conflict between reading verbal messages and imagining the spatial relations described by those messages. Listening to the same messages did not produce comparable interference with visualization."

DEMBO, MYRON H., and DONALD A. WILSON. "A Performance Contract in Speed Reading," *Journal of Reading*, 16 (May 1973), 627-633.

Summarizes a reading program designed for seventh grade students enrolled in English classes in the Compton Unified School District (near Los Angeles). The major performance objective was: "75 percent of the students in the program

will increase their reading speed five times over their beginning level with 10 percent more comprehension after twenty-four hours of instruction and twenty-two hours of outside reading." Findings indicate that overall reading rate and vocabulary scores increased and comprehension scores decreased. Only 13 percent of the students met the performance objectives. (9 references)

GORETSKII, V. G. "Vyrazitel' nost', Pravil' nost' i Skorost' Chteniya" ("Expressiveness, Correctness, and Speed of Reading"), *Nachal'—naya Shkola*, 35 (August 1967), 18-23.

Discusses ways of teaching accurate, expressive, and fast reading in the early elementary grades. (7 references)

HOLMES, JACK A., and HARRY SINGER. *Speed and Power of Reading in High School*, Cooperative Research Monograph No. 14, OE-30016. Washington, D.C.: U.S. Government Printing Office, 1966.

Comprehensive presentation of the substrata factor theory of reading and implications stemming from the research.

HOWARDS, MELVIN. "Strategies for Improving Our Concepts and Techniques in Regard to Speed in Reading," *Abstracts, Fifteenth Annual Convention*. Newark, Delaware: International Reading Association, 1970, 42.

"The essence of speed reading is a good, full mind which understands relationships, handles language with great facility, and a personality which yearns and needs to collect information." Suggests that "people need less to get information quickly than they need to understand relationships in their world."

MAXWELL, MARTHA J. "Cognitive Aspects of Skimming: Evidence and Implications," *Reading World*, 12 (May 1973), 229-238.

Describes the results of a preliminary investigation of skapa, "a simple, three step procedure for analyzing the cognitive aspects of skimming. . . . The theoretical and research implications of this technique are discussed." (4 references)

MAXWELL, MARTHA J. "Learning Style and Other Correlates of Performance on a Scanning Experiment," paper presented at the International Reading Association Convention, 1971. ED 055737

Investigates the relationships among learning style, reading scores, and scanning performance. Twenty high school students participated in the eighty-trial, ten-session, scanning experiment. Students searched for a target sentence embedded in a page and responded by pressing a button on a machine. Findings indicated that mean scanning times differed significantly between beginning and ending sessions and that "slow scanners were more constricted in application of strategies, while fast scanners reported more variability in eye movement patterns." The highest correlation was between impulsivity and scanning rate.

MCCRACKEN, ROBERT A. "Accelerating the Reading Speed of Sixth Grade Gifted Childen," *Exceptional Children*, 27 (Spring 1960), 27-28.

Findings indicate the feasibility of teaching faster reading before junior high for the more able students.

MCLAUGHLIN, G. H. "Reading at 'Impossible' Speeds," *Journal of Reading*, 12 (March 1969), 449-454, 502-510.

Distinguishes between "speed reading—which I take to include any technique dealing with more than 1,200 words a minute—and skimming, by which I mean absorbing information only from what is clearly seen on one line at each fixation." Discusses in some detail the reading processes of a university graduate. Concludes 1) "speed reading has strictly limited usefulness," 2) "a speed reader's behavior is similar in nearly all aspects to that of a normal reader," and 3) "the only essential objective difference between speed readers and other people is in their eye movement patterns." Suggests a theory of parallel processing and gives educational implications. (26 references)

MORRISON, IDA E., and MARY LUCILLE OAKES. "The Effect of Skimming on Reading Achievement," *Abstracts, Fifteenth Annual Convention*. Newark, Delaware: International Reading Association, 1970, 59.

Compares the effect of fifteen minutes a day of guided skimming on the reading achievement of children in second, third, and fourth grades, using control groups, over a four month period. Concludes that "skimming seemed to result in increased reading efficiency" with greater gains at the higher grade levels.

NADIEN, MARGOT, DONALD S. SCHAEFFER, and G. R. SCHMEIDLER. "Mood as a Confounding Variable in Eye Dominance, Field Dependence and Reading," *Perceptual and Motor Skills*, 29 (August 1969), 277-278.

Thirty-five university students were tested to see any relationships among their moods (according to four scales each containing seven categories), their reading of a passage from the Nelson-Denny Reading Test, their eye dominance, and their field dependence (according to part of the Hidden-figures Test). Findings indicated that "fast reading related to strong eye dominance and good comprehension for Ss in a good mood (but not for other Ss). Field dependence related to weak eye dominance and poor comprehension for Ss not in a good mood." (5 references)

ORR, DAVID B. "Note on Thought Rate as a Function of Reading and Listening Rates," *Perceptual and Motor Skills*, 19 (1964), 874.

Exploratory research tends to support the idea that "rate of processing of connected discourse is normally habituated, but trainable."

PAUK, WALTER. "Speed Reading?" *Journal of the Reading Specialist*, 4 (December 1964), 18-19.

Students with an initial speed of 250 words a minute can be reading at 500 words a minute in a few weeks with no loss of comprehension "as tested on twenty questions pertaining to the selection." Beyond this speed, loss in comprehension is noted.

POULTON, E. C. "Time for Reading and Memory," *British Journal of Psychology*, 49 (1958), 230-245.

Comprehensive study to determine the rate of comprehension in silent reading under different conditions. Subjects from the Royal Navy studied 144 statements 1) under a certain time limit for the whole series, 2) under a certain time limit for each statement, and 3) when only part of a statement was presented. Findings include the suggestion that "there seems to be a limit to the amount of material which can be understood in a given time. If we proceed faster than this, we may be able to recall slightly more words; but we shall not be able to recall more of the meaning. . . ." Regarding speed reading, "reading selectively at high speed will only be an advantage over reading unselectively, if soon afterward the reader returns to the information which he has selected" as, say, in notetaking. (16 references)

SAMUELS, S. JAY. "Effect of Word Associations on Reading Speed, Recall, and Guessing Behavior on Tests," *Journal of Educational Psychology*, 59 (1968), 12-15.

Contains the results of two studies, one involving fifth and sixth grade pupils and the other involving college students. Purpose was to determine if "a paragraph containing words with high-associative relationships would be read faster with better recall than a paragraph containing words of low-associative relationships." It was predicted that when students "answer multiple-choice questions without having read the paragraph upon which the questions are based, they would choose alternatives on the basis of the strength of the associative relationship between the words in the stem of the question and the response alternatives." Findings verified both hypotheses. (13 references)

STONE, DAVID R. "Speed of Idea Collecting in University Study-Reading," *Journal of Developmental Reading*, 5 (Spring 1962), 149-156.

"Sixty-two college students were given a series of experiences designed to affect their reading efficiency by varying the mode of attack." The students read and recorded for themselves the time required 1) to read a 500-1500 word passage, 2) to collect notes on the passage, and 3) to reread the passage quickly. Separate times were kept for article type passage and textbook type passage; the latter was handled with greater ease because of the additional cues. Discusses

M/1, C, and A-4, which stand for motivation/identification, collection, and active-reconstruction. Much improvement made over control group. (7 references)

THOMAS, E. LLEWELLYN. "Movements of the Eye," *Scientific American*, 219 (August 1968), 88-95.

States that, "in reading, as in driving an automobile, the predominant eye movement is the saccade, but the saccade of reading is initiated in a different way. When one gazes at a line on a printed page, only three or four words can be seen distinctly. If every word in the line is to be read, the eyes must jump two or three times. How often they jump depends not only on the reader's ability to process the visual information but also on his interest in what he is reading. Thus, the reading saccade is initiated not so much by the image on the periphery of the retina as by a decision made within the central nervous system. Fixation times lengthen as the material becomes harder to comprehend. The eyes may return at intervals to words scanned earlier; these regressions indicate the time it has taken the reader to recognize that his processing of the information was incomplete or faulty. Because we have long experience with the English language, we anticipate common sequences of words and so may fixate only the first few words of a phrase."

WHEELER, LESTER R., and VIOLA D. WHEELER. "A New Era in Reading," *Reading Teacher*, 16 (November 1962), 109-112.

Stresses the need to break the sound barrier in reading rate improvement.

STUDYING

Following are references to research involving rate and aspects of studying (skills, subject area performance, and grade point average).

ARTLEY, A. STERL, et al. "Perceived versus Measured Reading Skills," *Journal of Reading*, 16 (January 1973), 318-323.

Compares the perceived with the actual reading ability of a group of 142 University of Missouri at Columbia freshmen education majors. Findings indicated that the subjects perceive with greater accuracy their ability in comprehension and rate than in vocabulary.

BAHE, VIRGINIA. "Reading-Study Instruction and College Achievement," *Reading Improvement*, 6 (Winter 1969-1970), 51-61, 77.

Describes a two-year study to determine if instruction in reading and study skills "could significantly improve the substandard scholastic performance of selected University of Wisconsin at Milwaukee freshmen of high learning potential." There were thirty-three experimental volunteers involved in the first part of the study and twenty in the second part. Goals of the eight week summer program included improvement in reading rate and flexibility, concentration, detail in study-type reading, note-taking, study techniques, and written examinations. Retesting at the end of training indicated many significant initial mean gains which were, however, temporary "according to follow-up testing nine months later in Experiment I and four months after training in Experiment II. Analysis by t-test revealed that . . . rate was the only significant, lasting improvement by both experimental groups." The academic performance of the subjects in the experiment "was inferior to that of the controls, but not significantly so, throughout the two semesters of follow up in Experiment I and the one semester follow up in Experiment II." Bahe discusses possibilities of why significant improvement in reading-study skills "was not accompanied by significant improvement in academic performance of the experimental groups of volunteers. . . ." (29 references)

BÁTHORY, ZOLTÁN, and JUDIT KÁDÁR-FÜLÖP. "Some Conclusions for Curriculum Development Based on Hungarian IEA Data," *Comparative Educational Review*, 18 (June 1974), 228-236.

Summarizes points of a national report on educational development in Hungary. Findings suggest that "objectives related to reading speed should be included in the curriculum."

BUTCOFSKY, DON. "Any Learning Skills Taught in High School?" *Journal of Reading*, 15 (December 1971), 195-198.

The Preston-Botel Study Habits Checklist was given to 302 university freshmen who participated in individual instruction at the Learning Skills Center at the University of Delaware. Eighty percent of the students involved had academic difficulty as a result of one or more of the following: inferior notetaking, inferior study practices, irregularity of review of notes, failure to synthesize notes, failure to read sources other than the notes, and failure to use questions as guides to reading. Recommends that reading and study skills be taught by all content teachers concurrently. (6 references)

CARLSON, ELEANOR G. "An Investigation of the Effects of Developmental Reading Instruction in the Seventh and Eighth Grades," *Dissertation Abstracts*, 28, 2-A (1967), 490. (University of Minnesota)

Involved 460 seventh grade pupils and 424 eighth grade pupils in Austin, Minnesota. During the first semester, "approximately half . . . were enrolled in regularly scheduled reading classes; the other half, in science classes. During the second semester, scheduling was reversed. Reading instruction "followed procedures in effect since 1952 when reading became a required one-semester course for all students in grades seven and eight of the Austin junior high schools." At each grade level, thirty-six subgroups were formed for analysis of data. Findings indicated that "students in the experimental groups in both grades achieved significantly higher scores than those in the control group in speed of comprehension, vocabulary, and level of comprehension." Findings also indicated "significant differences in achievement among low, middle, and high intellectual ability levels in all areas measured, except speed of comprehension and ability to read science materials."

HARRIS, ALBERT J. "Research on Some Aspects of Comprehension: Rate, Flexibility, and Study Skills," *Journal of Reading*, 12 (December 1968), 205-210, 258-260.

Reviews research relating to rate and flexibility, rate and comprehension, rate and study skills, and research reading. Cites a study by Walter Pauk which contains findings that question the value of attention to rate in a course designed to improve study skills and scholarship. (22 references)

KING, PAUL T., WILLIAM D. DELLANDE, and TERRY L. WALTER. "The Prediction of Change in Grade Point Average from Initial Reading Rates," *Journal of Reading*, 13 (December 1969), 215-218, 245-246.

Experimental group consisted of 115 graduates and undergraduates enrolled in a reading improvement program at the University of Missouri at Columbia. Tachistoscopic training was included in the 20-hour program. Changes in post-semester grade point averages were not significantly different for students with initial reading rates of 250 words a minute or more, or for students with

initial reading rates of 200 words a minute or less. However, "students with initial reading rates of 200 to 250 wpm had an increase in GPA which was significant at the .05 level." (8 references)

PAUK, WALTER. "Scholarly Skills or Gadgets," *Journal of Reading*, 8 (March 1965), 234-239.

Describes a study involving two courses at Cornell: the first, a six-session study skills course with no attention to speed reading and the second, a fourteen-session course with the first two sessions on "speed reading, which provided instruction in using reading pacers. . . ." The two experimental groups were matched with a control group for sex, year, school, and SAT scores. The courses were taught in fall semester. Grade point averages were analyzed between fall and the following spring semester. Findings indicated "in comparing the six-session study skills experimental group with its control group, we found that there was a three-and one-half grade point difference in favor of the experimental group" and comparing the fourteen-session study skills experimental group with its control group, we found a two-and three-quarters grade point difference in favor of the experimental group." Further analysis revealed that "the students in the six-session study skills course achieved an average grade point gain which was three times that of the students who took the fourteen-session course." Pauk discusses the educational implications of these findings. (2 references)

ROOT, PAUL R. "Speed Reading: Its relation to High School Achievement in English, History, Mathematics, and Science in Hot Springs, Arkansas," *Dissertation Abstracts*, 25, 3 (1965).

Purpose was to evaluate "the speed reading program in the senior high school at Hot Springs, Arkansas" and its effect upon grades. Dependent variables were gained in grade point average in English, history, mathematics, and science. Independent variables included participation in a speed reading course, sex, socioeconomic status of the family, junior high school attended, number of children in family, and grade level of the student at the time of his participation in the reading course. "The major conclusion. . . was that the grade point average in history and science was significantly affected by participation in a speed reading course, but the gain in grade point average in English and mathematics was not significantly affected by participation in a speed reading course."

SHORES, J. HARLAN. "Dimensions of Reading Speed and Comprehension," *Elementary English*, 45 (January 1968), 23-28, 43.

Suggests that a distinction be made between "relational elements" of reading (vision, motivation, experiential background, proficiency with clues to word recognition), and "behavior elements" (Can he distinguish main ideas from subordinate ones? Can he evaluate, criticize, use a dictionary, find his way with a map?). Cites the results of studies indicating that pupils must be taught flexible reading skills. Stresses the value of teaching pupils to read purposefully.

CONDITIONING

Following are references to research involving rate and aspects of conditioning (operant conditioning, group guidance, and hypnotic suggestion).

BRANDT, JAMES DAVID. "Internal versus External Locus of Control and Performance in Controlled and Motivated Reading Rate Improvement Instruction," unpublished doctoral dissertation, Ohio State University, 1974. Reported in David M. Wark (Ed.), *College and Adult Reading*, Seventh Yearbook of the North Central Reading Association, St. Paul, Minnesota, 1974, 39-60.

Investigates the performance of college students classified as Internal (I) and External (E) on the locus of control personality dimension. Two approaches to reading rate instruction were used. The approach referred to as "motivated reading rate instruction" was found to be significantly more effective in increasing reading rate than the "controlled reading rate instruction" approach.

CRAIG, MARGARET L. "A Study of the Effectiveness of Group Guidance on Reading Improvement of a Group of Junior College Freshmen," *Dissertation Abstracts*, 28, 1-A (1967), 47-48. (University of Southern Mississippi)

Involved freshmen students in two sections of an improvement of reading course at Hinds Junior College in Raymond, Mississippi. Eighteen students were randomly selected from each of the two sections, nine serving as an experimental group and nine as a control group in each section. "Once a week for . . . twelve weeks the two experimental groups participated in a one-hour, nondirective group guidance session." Findings indicated "no significant change in the experimental and the control groups in reading improvement, dominant interests, or movement relative to ideal self-concept," although, it is noted, group guidance "might be more effective if extended for more than twelve weeks."

DONK, LEONARD J., et al. "Toward an Increase in Reading Efficiency Utilizing Specific Suggestions: A Preliminary Approach," *International Journal of Clinical and Experimental Hypnosis*, 16 (1968), 101-110.

Describes an experimental design to study the effectiveness of suggestion to increase reading speed. Twenty-four university students were selected for their hypnotic susceptibility from forty-eight students enrolled in a mental health class. Preliminary findings "indicate that a hypnotic induction or post-hypnotic suggestions were effective in increasing reading speed without a concomitant loss in comprehension . . . ." (13 references)

KIMBERLY, MARION C. "The Effectiveness of Reading Speed Instruction in Grades Two, Four, Six, and Eight," unpublished doctoral disseration, Rutgers University, 1973, ED 078373.

Reports the effects of rate training on students in grades two, four, six, and eight. Only eighth grade children showed statistically significant rate increases on the Gates-MacGinitie Test, although all groups showed significant increases on an informal rate test. (88 references)

MAXWELL, MARTHA J., and ARTHUR C. MUELLER. "Relative Effectiveness of Techniques and Placebo Conditions in Changing Reading Rates," *Journal of Reading*, 11 (December 1967), 184-191.

Involved 120 students at the University of Maryland. Forty were given a handout containing specific suggestions for increasing reading rate, with instructions to practice for a week. A second group of 40 students "were given materials designed to motivate them to read faster by stressing the importance of rapid reading but without a description of specific techniques." The remaining 40 students served as a control group. "The experimental group given techniques and urged to practice showed significantly greater rate gains (33 percent improvement) than either the group receiving motivational material (11 percent improvement) or the controls (9 percent improvement)." (7 references)

SWALM, JAMES, and MARTIN KLING. "Speed Reading in the Elementary School," *Elementary School Journal*, 74 (December 1973), 158-163.

Compares the results of two methods of increasing the reading rate of 40 fifth grade and 36 sixth grade students. The experimental group spent thirty sessions in motivated rate drill; the control group spent thirty sessions in free reading with instructions to read faster. Findings indicate that "for improving reading rate, timed reading drills were significantly better than free reading." The effects of rate training on comprehension "were mixed." (17 references)

WARK, DAVID M. "Case Studies Behavior Modification," *Eighteenth Yearbook of the National Reading Conference*, 1969, 217-228.

Presents five case studies of students who increased their rate and study skills through reinforcement behavior. The students, who were enrolled in a how to study course, first found their words-per-minute rate of reading a textbook and then entered into a self-reward contract. Wark discusses the cases in light of the theoretical background for reinforcement, including references to Watson, Skinner, Wolpe, and others. (21 references)

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SEX DIFFERENCES

During the 1930s came a series of studies relating to sex: who reads faster, boys or girls? Various results were found, with most favoring girls.

BERMAN, I. R., and C. BIRD. "Sex Differences in Speed of Reading," *Journal of Applied Psychology*, 17 (1933), 221-226.

Study based on 463 female and 327 male sophomore psychology students—one group of a three-group study—showed females to be reading about twenty words a minute faster than males. Claimed a result of female "general language superiority that is manifest from infancy to adult life."

MOORE, J. E. "Sex Differences in Speed of Reading," *Journal of Experimental Education*, 8 (1939), 110-114.

Testing 1,215 boys and 1,518 girls from grades eight through sixteen, showed girls read faster than boys in every grade except the last two grades in college. Measuring instrument was the Van Wagenen Rate of Comprehension Test, Form B, part of the battery known as the Unit Scales of Aptitude. (7 references)

MOORE, J. E. "Sex Differences in Speed of Reading: A Correction," *Journal of Experimental Education*, 8 (1939), 245.

Certain errors in the data were pointed out by George K. Bennett and Sydney Roslow of the Psychological Corporation. "Fortunately, the errors did not change the basic findings appreciably." Errors related to the number of statistically reliable differences (only two grades instead of four grades were significant) but still favored girls in these two and as a whole. (1 reference)

MOORE, J. E. "A Study of Sex Differences in Speed of Reading," *Peabody Journal of Education*, 17 (1940), 359-363.

A modified replication of a study made by Traxler in 1933-1935. Results were similar; no statistically significant difference could be found, either in intelligence or reading speed. Used Iowa Silent Reading Test and the Otis Test. (6 references)

TRAXLER, A. E. "Sex Differences in Rate of Reading in High School," *Journal of Applied Psychology*, 19 (1935), 351-352.

Using the Iowa Silent Reading Test Form A with seniors at the University of Chicago and High School and Form B with subfreshmen, freshmen, sopho-

mores, juniors, and seniors (totaling 256 boys and 283 girls), it was found that there were no statistically significant differences. Concluded that, as groups, boys and girls "read at equal rates throughout the high school." Girls may possess . . . a general language superiority over boys, but there is no evidence that this superiority, if it exists, influences the relative reading rates of girls and boys at the high school level.

MEASUREMENT

How to measure reading rate and flexibility is still a perplexing problem. Answers still need to be found for basic questions. Some of these questions are contained in Berger's article, "Reading Rate: Claims and Controversies," *Proceedings of the College Reading Association*, 1967. Some answers are provided by Earl F. Rankin in *Measurement of Reading Flexibility*, an IRA/Eric publication, 1974, 62 pp. Other references follow.

APPLEBEE, ARTHUR N. "Toward Independent Measures of Speed of Reading," *Journal of Learning Disabilities*, 6 (January 1973), 21-25.

Differentiates speed of reading into four skills and reports the measurement of one of the skills (speed of reading known vocabulary). Eighty-four students were involved. (9 references)

BERGER, ALLEN. "The Reliability of the Flexibility of Reading Test," *Alberta Journal of Educational Research*, 15 (September 1969), 165-168.

Describes the step-by-step procedure used to obtain Pearson product-moment correlation coefficients for the three forms of the Braam-Sheldon Flexibility of Reading Test. Each form is composed of five passages: narrative, literature, science, history, and psychology. Overall rate reliabilities obtained with university freshmen were .89 between the first and second forms and .90 between the second and third forms. (4 references)

BERGER, ALLEN, and DONALD BEGGS. "Within-Groups Changes in Reading Performance: A Further Analysis," *Perceptual and Motor Skills*, 27 (October 1968), 292-294.

Although many studies report results in terms of mean differences, attention is not often given to changes within the groups studied. Further examination of a study (Berger 1968) showed that each of the four methods groups contained students who increased and some who either decreased or maintained the same performance at the end of instruction. Suggests the value of increased attention to the performance of individuals within groups studied. (2 references)

BLIESMER, EMERY P. "1964 Review of Research in College-Adult Reading," *Philosophical and Sociological Bases of Reading*, Fourteenth Yearbook of the National Reading Conference, 1965, 238.

Cites weaknesses found in many investigations.

BRAAM, LEONARD S. "Developing and Measuring Flexibility in Reading," *Reading Teacher*, 16 (January 1963), 247-251.

Discusses the Flexibility of Reading Test and the possible uses of effective reading rate.

CARVER, RONALD P. "Designing Reading Rate Research," *Reading: Convention and Inquiry*, Twenty-Fourth Yearbook of the National Reading Conference, 1975, 241-245. (12 references)

Reports the effects of motivation and inaccuracy of terminology and measurement on the results of reading rate research.

CORMAN, LOUISE, et al. "More Effective Reading Tests of Comprehension and Rate," *Studies in Learning Potential 3*, 65 (1973). Cambridge: Research Institute for Educational Problems, ED 085682.

The effectiveness of norm-referenced survey tests developed for fifth and seventh grade students to measure rate and comprehension was studied and three alternate forms were constructed. (23 references)

DAVIS, FREDERICK B. "Measurement of Improvement in Reading Skill Courses," *Eleventh Yearbook of the National Reading Conference*, 1962, 30-40.

Problems involved in measuring rate of reading are highlighted by Davis. He notes that by merely telling a person to read faster he may read from 40 to 80 percent faster. Davis says this fact is rarely taken into consideration in measuring rate of reading. He notes also that tests must be developed to measure the different types of reading such as skimming, reading for the main thread of thought, and reading to understand the content. Furthermore, he points out, even though pre- and poststandardized tests are properly administered, contamination may creep in as a result of students possibly having been trained to respond to a different set of instructions throughout the speed course. (8 references)

EURICH, ALVIN C. "The Relation of Speed of Reading to Comprehension," *School and Society*, 32 (1930), 404-406.

A variety of tests were given to university students in an attempt to measure relationship between rate and comprehension. Concluded that "the relation between speed and comprehension is dependent upon the manner in which each is measured. The average of twenty-six correlations reported in this study was .31. . . ." Noted as being rather low. Tests used included Minnesota Speed of Reading Test A and B; Chapman-Cook Test A and B; and Monroe Speed Test, Forms 1 and 2.

GALLO, DONALD R. *Reading Rate and Comprehension: 1970-1971 Assessment.* Denver, Colorado: Education Commission of the States. Report 02-R-09, National Assessment of Educational Progress sponsored by DHEW, 1972, ED 076934.

Reports the results of national assessment of rate and literal comprehension skills of nine-, thirteen-, and seventeen-year-olds, and young adults. Each subject read two passages and answered five comprehension questions per passage. Results are reported by region, sex, race, parental education, and size and type of community.

GLASS, GERALD G. "Rate of Reading: A Correlation and Treatment Study," *Journal of Reading*, 11 (December 1967), 168-178.

Investigates seven variables—rate of perception, vocabulary, compulsiveness, grade point average, speed of closure, flexibility of closure, and drive—and their relationship to reading rate. Presents and discusses the intercorrelations obtained. (4 references)

HOLMES, JACK A. "Speed, Comprehension, and Power in Reading," *Eleventh Yearbook of the National Reading Conference*, 1962, 6-14.

Discusses the substrata factor theory and an experiment based upon the theory. The theory is "concerned with the way the mind mobilizes sets of subabilities into an ordered arrangement of hierarchy." The experiment involved 400 students who were given "some fifty-six separate tests, including such diverse elements as primary mental abilities, linguistic abilities, perceptual abilities, study methods, skills and attitudes, and . . . interest factors . . . ." Found that power of reading "is greatly dependent upon a knowledge of words and the concepts that they symbolize." (2 references)

HUMPHRY, KENNETH H. "An Investigation of Amount Time and Time Limit Methods of Measuring Rate of Reading," *Journal of Developmental Reading*, 1 (October 1957), 41-54.

Evidence did not indicate superiority of one way over the other in measuring reading rate.

LETSON, CHARLES T. "Speed and Comprehension in Reading," *Journal of Educational Research*, 52 (1958), 49-53.

Reviews studies on the relationship of rate and comprehension. Study involved 601 college freshmen in early 1956. Found that when considering the number of right responses only, relationship between speed and comprehension is high; when considering the ratio of right responses and number attempted, relationship is low and negative; relationship between speed (words covered) scores on difficult and easy materials is high; relationship between speed and comprehension scores on difficult and easy materials is moderate; relationship be-

tween speed and comprehension scores is high for easy materials and decreases as difficulty increases; readers tend to read difficult and easy materials at same rate. (19 references)

MAXWELL, MARTHA J. "An Experimental Investigation of the Effect of Instructional Set and Information on Reading Rate," *Fourteenth Yearbook of the National Reading Conference*, 1965, 181-187.

Instructing students to read faster on a standardized test produces significantly faster reading rate. Suggests that reading gains following training "may be mere artifacts, since the student's initial speed potential (i.e., how fast he could read by forcing himself) is not known." (2 references)

NACKE, PHIL L. "Assessment of Flexible Efficient Reading," *Twentieth Yearbook of the National Reading Conference*, 1971, 256-265. (33 references)

Deals with four issues in measuring reading flexibility.

NARAYANASWAMY, K. R. "The Measurement of Reading Ability," *English Language Teaching*, 29 (January 1975), 143-150.

Presents a method of measuring reading rate of comprehension based on the writings of Hunter Diack.

RANKIN, EARL F., JR. "The Relationship between Reading Rate and Comprehension," *Eleventh Yearbook of the National Reading Conference*, 1962, 1-5.

Reviews the results of studies relating to rate and comprehension. Observes the existence of much contradiction and confusion. Points out that much of the confusion results from poor measuring devices, poor measuring procedures, differences in difficulty and familiarity of materials, the intelligence of the readers being tested, and/or other factors. (16 references)

RANKIN, EARL F., JR. "A New Method of Measuring Reading Improvement," in J. Allen Figurel (Ed.), *Reading and Inquiry*, Proceedings, 10. Newark, Delaware: International Reading Association, 1965, 207-210.

Discusses the residual gain method of measuring rate.

ROBINSON, F. B. "Speed versus Comprehension in Reading: A Discussion," *Journal of Educational Psychology*, 31 (1940), 554-558.

Replies to M. A. Tinker's article, "Speed Versus Comprehension in Reading as Affected by Level of Difficulty," *Journal of Educational Psychology*, 30 (1939), 81-94. Robinson draws different conclusions from the data. Instead of concluding that "there is an intimate relationship between speed and comprehension when the textual material is within the reader's educational experience," he feels that most of the experimental evidence denotes an opposite relationship, and cites an artifact—the test measure itself—as a source of confusion.

ROBINSON, F. B., and H. M. MCCOLLOM. "Reading Rate and Comprehension Accuracy as Determinants of Reading Test Scores," *Journal of Educational Psychology*, 25 (1934), 154-157.

Checked two groups: one consisting of thirty-seven college freshmen who scored in the highest 15 percent of the Iowa Silent Reading Test and one, of the thirty-three who scored in the lowest 15 percent. Found reading tests are faulty in that speed scores raise comprehension scores; that is, the faster reader tends to get a higher comprehension score.

STROUD, J. B., and M. HENDERSON. "Rate of Reading and Learning by Reading," *Journal of Educational Psychology*, 34 (1943), 193-205.

Three experiments were conducted to determine the relationship between rate and comprehension. Found no relationship. Said that in normal reading situations the brighter person, who may normally read faster, may tend to think about different ramifications stemming from his reading, thus slowing his speed. All that can be said about the relationship is "it varies with the conditions of reading imposed and with the method of measurement employed." (8 references)

THOMAS, SYLVIA LOUISE. "An Analysis of a Reading Rate Improvement Program in Grades Two, Four, and Six," unpublished doctoral dissertation, Montana State University, August 1972, ED 067653.

Reports effects of reading rate instruction on comprehension. Significant gains in comprehension were made in grade two, while both rate and comprehension showed significant increases in grade four. Gains made at the end of the experimental program were found to be sustained six months later.

TINKER, MILES A. "Dr. Robinson on Speed versus Comprehension in Reading: A Discussion," *Journal of Educational Psychology*, 31, (1940), 559-560.

This is in reply to Robinson's charges against Tinker's article, "Speed versus adequate method of discovering the true relation between speed and comprehension in specific reading skills is to measure rate and comprehension on the same or strictly comparable material." Further, "data obtained by this method reveal very high intercorrelations. With the evidence now available, the only justifiable conclusion is that there is a close relation between speed and comprehension in reading."

TINKER, MILES A. "Dr. Robinson on Speed Versus Comprehension in Reading: A Discussion," *Journal of Educational Psychology*, 31, (1940), 559-560.

This is in reply to Robinson's charges against Tinker's article, "Speed Versus Comprehension in Reading: A Discussion," *Journal of Educational Psychology*, 30 (1939), 81-94. Tinker maintains there is no artifact and charges Robinson

with "an unjustified misinterpretation of my results." He cites semantics as having a role in the confusion.

WARK, DAVID M., and MONICA KOLB. "An Experiment in High Pressure Reading Instruction," *Journal of Reading*, 11 (December 1967), 179-183.

Presents the "confusing" results of a study involving university students in the form of humorous and thought provoking letters.